

Advancing the technology behind fuel cells

Physics department colloquium evaluates options, progress on path to sustainability

Jason Fish
Content Manager

What is a fuel cell? What can they do? Where could they go? Who is working on them? These were the questions Dr. Neal Sullivan posed before a Physics Department Colloquium last week.

Sullivan is an assistant professor in the Engineering Division and Director of the on-campus Colorado Fuel Cell Center (CFCC). His January 15 presentation, entitled *Fuel Cells in the Front Range*, gave an overview of fuel cell research at Mines, in Colorado, and around the nation.

"We're trying to be a leader in this technology," said Sullivan. "CSM has key strengths for this."

The Colloquium started off with a description of a fuel cell. Sullivan passed some samples around the room, one a solid oxide fuel cell (SOFC) and the other a proton exchange membrane (PEM) cell.

"It's basically an electricity generator," said Sullivan.

While these cells have produced results in the lab, they cannot yet compete with conventional power systems such as gasoline generators and AA batteries.

"Voltage generation is not impressive right now," said Sullivan. "We live in a minimum nine volt world and we'd like to get up to 240 volts."

Fuel cells have advantages over traditional combustion of coal and processing oil in efficiency, lack of harmful emissions, and low fuel usage



MEAVE HAMM / OREDIGGER

Passion for progress: Dr. Neal Sullivan, of the Engineering Division at CSM, explains the scientific basis behind fuel cell technology and different leaders in the race of innovation.

per cell. However, the high initial costs and inability to mass produce them are keeping fuel cells off the market.

Yet, Sullivan mentioned a trend in research moving away from fossil fuel

designs. "A lot of people who worked in combustion are now turning their efforts towards fuel cells, especially in ceramic types, like SOFCs."

The presentation moved on to the recent developments in the CFCC. Teams of undergraduate and graduate students are working under professors from several departments, including Chemical Engineering, Materials Science, and Engineering.

"We have a lot of great people work-

ing in there right now," said Sullivan.

CFCC researchers are combining efforts with companies, national labs, and universities around the country. ITN Energy Systems, VersaPower, Protonex, and the National Renewable Energy Laboratory (NREL) are a few of the organizations partnering with the Center to innovate in the fuel cell industry.

The military have also taken an interest in fuel cell research, looking

to replace their standard equipment batteries with fuel cell packages. Sullivan listed other areas of application, such as competing with the current electrical grid systems and backup power systems in buildings.

Some SOFC systems are already in operation and providing additional benefits to their users. One company runs a large fuel cell generator that outputs 220 kilowatts of power for its electrical systems. Since its operating temperature is around 800 degrees Celsius, the excess heat from the SOFC is used to warm the building during the winter.

Among the challenges remaining, fuel source is a primary focus. Sullivan discussed the view that a hydrogen economy is necessary for fuel cells to become a commercially viable power option. He used SOFCs, his personal area of research, as a counterexample.

"We can run SOFCs on hydrocarbon fuels like methane, butane, and propane," said Sullivan. "Nuclear power may be a good fuel as well."

Sullivan discussed the connections between fuel cell research in the CFCC and the Physics department.

"The fundamental charge transfer in the fuel cell is not very well understood," said Sullivan. "There's a lot of physics happening here."

Afterwards, several people commented on the presentation.

"It was definitely interesting," said Aaron McEvoy, a graduate student in Physics. "I think there are a lot of possibilities for collaboration between Physics and the fuel cell work."

"I enjoyed it," said David Larue, a part-time Physics graduate student and full-time administrator in Academic Computing and Networking. "It was timely and useful."

Inside
this
Edition

World News – Page 2

MLK Background – Pg 3

E-Days History – Pg 4

Geek of the Week – Pg 5

Environmentalism – Pgs 6, 7

Comics – Pgs 5, 11



SURVIVING THE DROUGHT

A look at water sustainability

Jake Rezac
Staff Writer

"Normal engineering practice for designing water supply and flood control projects is to plan as if the future will look like the past," Western Water Assessment Director Bradley Udall said in a statement to the US Senate. "However, we now know that our future climate will not look like the past." With these words, Udall was describing the problems that are faced by many water management groups – problems which cause "water management actions based on "normal" [standards] as defined by the twentieth century... to be bad bets."

Because of these problems, the improvement of techniques for water sustainability and management has been at the forefront of

research by many groups. Some, such as the Pacific Institute, focus on the political aspect. Others, such as the federally founded Advisory Committee on Water Information, focus more on data and modeling water resources. According to the Pacific Institute, both of these aspects are keys in promoting water sustainability. They suggest a combination of science and politics to solve the problems caused by climate change.

Another problem facing water managers is the usage of greater amounts of water than ever be-

fore. As an example, Udall said, "Drought and increased demand have combined to create a serious water supply problem on the Colorado River."

"Drought and increased demand have combined to create a serious water supply problem on the Colorado River."

ing on the lower Colorado River, who have come to rely on the excess water from upstream. "The Lower Basin states... have over-consumption and growth problems."

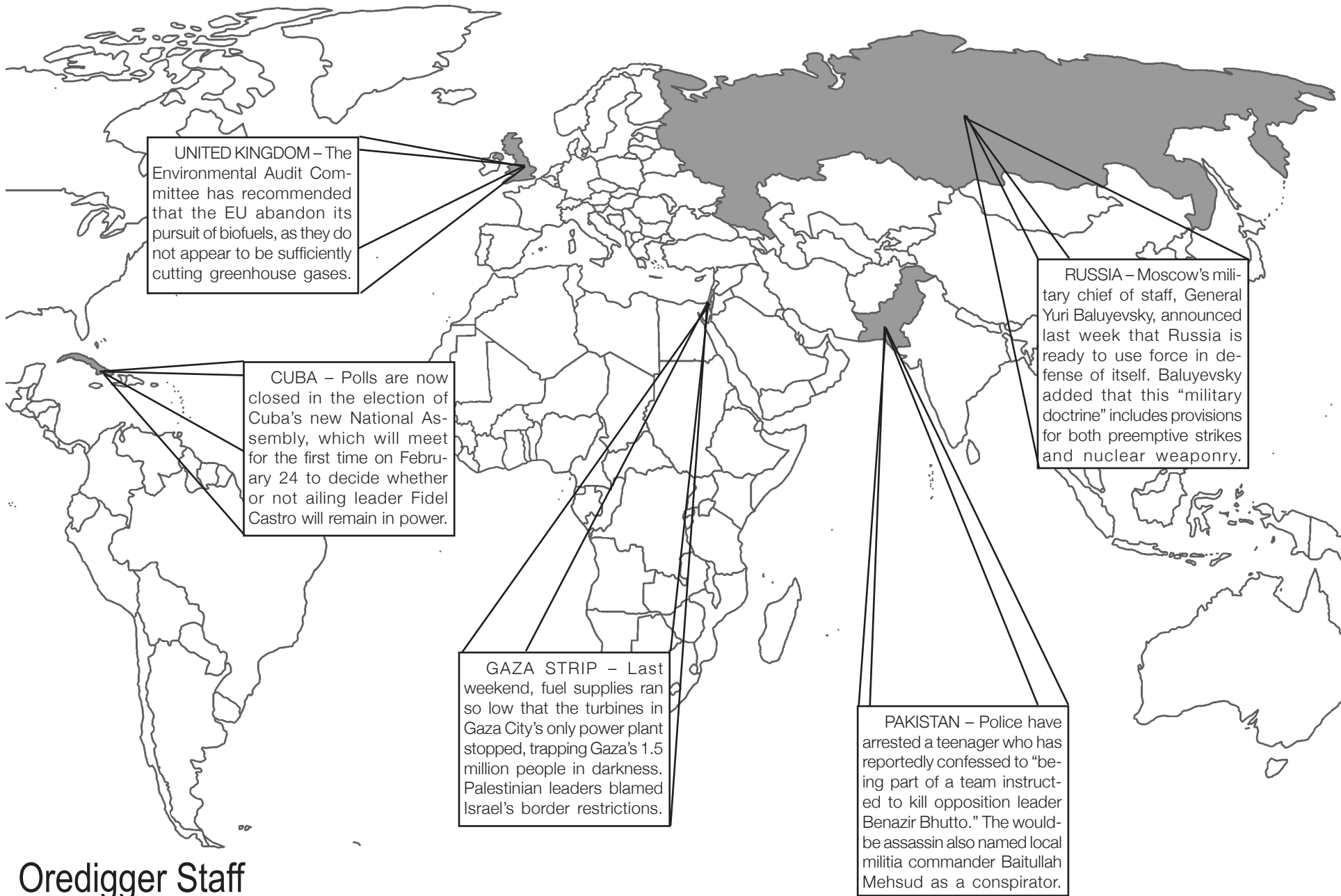
Despite all the problems associated with water sustainability, people such as Udall still have hope for water managers and water sustainability. "To help

the nation adapt to water supply problems caused by climate variability and change, we need more effective federal climate change science management and much more regionally-directed science." In this regard, "some of the largest utilities in the nation have begun meeting to learn from one another and speak with a collective voice about what they need from federal, state, and regional agencies."

Despite this hope, there are still obstacles to sustainability. "Solutions will involve challenges to everyone... It is time that we start acquiring 'insurance' against the effects of climate change by making sure that we have the necessary management, resources, tools, and people to pursue critically needed water sector climate change adaptation measures."

World News in Brief

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Obama appeals for unity at King's church, Clinton gets Harlem church leader's endorsement

Nedra Pickler
Associated Press Writer

ATLANTA (AP) – Barack Obama called Sunday for unity to overcome the country's problems and acknowledged that "none of our hands are clean" when it comes to healing divisions. Hillary Rodham Clinton picked up a Harlem church leader's endorsement.

Heading into the most racially diverse contest yet in the presidential campaign, Obama took to the pulpit at Martin Luther King Jr.'s Ebenezer Baptist Church on the eve of the federal holiday marking the civil rights hero's birth 79 years ago. He based his speech on King's quote that "Unity is the great need of the hour."

"The divisions, the stereotypes, the scapegoating, the ease with which we blame the plight of ourselves on others, all of that distracts us from the common challenges we face: war and poverty; inequality and injustice," Obama said. "We can no longer afford to build ourselves up by tearing each other down. We can no longer afford to traffic in lies or fear or hate. It is the poison that we must purge from our politics; the wall that we must tear down before the hour grows too late."

In New York, at the Abyssinian Baptist Church in Harlem, Clinton told how she had traveled years ago with her church youth group to hear him speak.

"It was a transforming experience

for me," Clinton said. "He made it very clear that the civil rights movement was about economic justice."

A day earlier, Clinton defeated Obama in Nevada's caucuses and the two challengers are looking ahead to South Carolina, where the Democratic primary is Saturday. The state is the first where a large number of black voters will participate, and Obama needs a win to remain a front-runner in the race for the party's presidential nomination. He won the leadoff contest in Iowa, and lost New Hampshire and Nevada to Clinton.

Obama is counting on blacks to stick with him despite his losing two in a row to Clinton. He lost Nevada despite winning 83 percent of blacks, who made up 15 percent of the total vote. In South Carolina, they are expected to make up at least half the turnout.

Obama's campaign has worked to overcome concerns among black voters that he wouldn't be able to win an election in white America. But his poll numbers leaped among blacks after his victory in practically all-white Iowa.

"I understand that many of you are still a little skeptical," Obama said Friday night at a King ban-

quet in Las Vegas. "But not as skeptical as you were before Iowa. Sometimes it takes other folks before we believe ourselves."

He said in an interview with the Rev. Jesse Jackson on WVON-AM in Chicago that South Carolina is "absolutely critical to our success."

After appearing in Harlem, Clinton picked up the endorsement of the Rev. Calvin Butts. As dozens of Obama supporters

minimizing his role in the passage of landmark civil rights legislation. She was also criticized when some of her supporters pointed out that Obama admitted to using cocaine and smoking marijuana as a youth. The two candidates called a truce on the racially tinged debate last week.

Obama himself brought up the drug use as he talked about why he has built a campaign on hope.

"The odds of me standing here today are so small, so remote that I couldn't have gotten here without some hope," he said to shouts of support from the audience. "My daddy left me when I was 2 years old. ... I got in trouble when I was a teenager, got into some things that people now like to talk about. I needed some hope to get here."

Obama said blacks often have been the victims of injustice, but he said they also have perpetrated divisions with gays, Jews and immigrants.

"If we're honest with ourselves, we'll acknowledge that our own community has not always been true to King's vision of a beloved community," he said to applause.

Obama suggested he's allowed divisions to creep into his campaign in recent days. "Last week, it crept into the campaign for president, with charges and countercharges that served to obscure the issues instead of illuminating the critical choices we face as a nation. None of our hands are clean," he said.



COURTESY WIKIMEDIA COMMONS

shouted "Harlem for Obama," Clinton's supporters tried to drown them out by shouting "Hi-l-la-ry!"

Clinton spoke warmly of her opponent saying, "I recognize what a challenging choice this is."

Obama's and Clinton's campaigns engaged in several days of back and forth after some interpreted her comments about King as

“Deep” Magnetic Highs in Northwestern North America

Kyle Clark
Staff Writer

On January 17, Rick Saltus of the U. S. Geological Survey (U.S.G.S.) lectured in the Green Center Metals Hall about unusual crustal structure in Alaskan and Northwestern Canadian territories. From the Brooks Range to the Rocky Mountains, there are areas where some of the underlying bedrock is exposed like the area was ridged and

folded over. Dr. Saltus discovered there was an abundant amount of magnetic material and less thermal activity in the areas that formed this crustal deformity. Dr. Saltus theorized that the magnetic material, which is very dense, helps reflect some of the heat permeating through the lithosphere. This causes uneven thermal erosion and puts a bend in the tectonic front. Saltus has worked for the U.S.G.S as a geophysicist since 1980.

Popular view of Martin Luther King Jr. ignores his complexity, his other issues

Deepti Hajela
Associated Press Writer

NEW YORK (AP) _ They are some of the most famous words in American history: “I have a dream ...” And the man who said them has become an icon. Martin Luther King Jr. has certainly gotten his share of attention this year, the subject of a presidential campaign controversy over his legacy that blew up just around the time of the holiday created to honor him. But nearly 40 years after his assassination in April 1968, after the deaths of his wife and of others who knew both the man and what he stood for, some say King is facing the same fate that has befallen many a historical figure, being frozen in a moment in time that ignores the full complexity of the man and his message. “Everyone knows, even the smallest kid knows about Martin Luther King, can say his most famous moment was that ‘I have a dream’ speech,” said Henry Louis Taylor Jr., professor of urban and regional planning at the University of Buffalo. “No one can go further than one sentence,” he said. “All we know is that this guy had a dream, we don’t know what that dream was.” At the time of his death, King was working on anti-poverty and anti-war issues. He had spoken out against the Vietnam War in 1967, and was in Memphis in April 1968 in support of striking sanitation workers. King had come a long way from the crowds who cheered him at the 1963 March on Washington, when he was introduced as “the moral leader of our nation”, and when he pronounced “I have a dream” on the steps of the Lincoln Memorial. By taking on issues outside segregation, he had lost the support of many newspapers and magazines, and his relationship with the White House had suffered, said Harvard Sitkoff, a professor of history at the University of New Hampshire who has written a recently published book on King. “He was considered by many to be a pariah,” Sitkoff said. But he took on issues of poverty and militarism because he considered them vital “to make equality something real and not just racial brotherhood but equality in fact,” Sitkoff said. While there has been scholarly study of King and everything he did, that knowledge hasn’t translated

into the popular culture perception of him and the civil rights movement, said Richard Greenwald, professor of history at Drew University. “We’re living increasingly in a culture of top 10 lists, of celebrity biopics which simplify the past as entertainment or mythology,” he said. “We lose a view on what real leadership is by compressing him down to one window.” That does a disservice to both King and society, said Melissa Harris-Lacewell, professor of politics and African-American studies at Princeton University. By freezing him at that point, by putting him on a pedestal of perfection that doesn’t acknowledge his complex views, “it makes it impossible both for us to find to new leaders and for us to aspire to leadership,” Harris-Lacewell said. She believes it’s important for Americans in 2008 to remember how disliked King was in 1968. “If we forget that, then it seems like the only people we can get behind must be popular,” Harris-Lacewell said. “Following King meant following the unpopular road, not the popular one.” In becoming an icon, King’s legacy has been used by people all over the political spectrum, said Glenn McNair, associate professor of history at Kenyon College. He’s been part of the 2008 presidential race, in which Barack Obama could be the country’s first black president. Obama has invoked King, and Sen. John Kerry endorsed Obama by saying, “Martin Luther King said that the time is always right to do what is right.” Not all the references have been received well. Sen. Hillary Rodham Clinton came under fire when she was quoted as saying King’s dream of racial equality was realized only when President Lyndon B. Johnson signed the Civil Rights Act of 1964. King has “slipped into the realm of symbol that people use and manipulate for their own purposes,” McNair said. Harris-Lacewell said that is something people need to push back against. “It’s not OK to slip into flat memory of who Dr. King was, it does no justice to us and makes him to easy to appropriate,” she said. “Every time he gets appropriated, we have to come out and say that’s not OK. We do have the ability to speak back.” Copyright 2008 The Associated Press.

Colleges rely more on part-time profs - but do little to stop the cycle

Justin Pope
Associated Press Writer

College students are getting a raw deal, a recent New York report asserted. The problem is they’re taking too many classes from part-time, or adjunct, professors. But that same report unwittingly revealed something about how higher education is more culpable than it likes to admit when it comes to creating the problem. The issue is a huge one in higher education far beyond New York, with about half of the nation’s college faculty now on part-time contracts. Adjuncts are cheaper for colleges, but they often lack the time and resources for focused teaching, and research shows students’ performance suffers if they are taught by part-timers too often. In its report last month, a 30-member commission called for New York’s state (SUNY) and city (CUNY) systems to alleviate the over reliance on adjuncts by hiring 2,000 more full-time faculty for their 87 campuses. But just one page away, the report also called for adding at least 4,000 new doctoral students. There’s a connection between those numbers that deserves more attention. In many fields, there are already too many Ph.Ds awarded for the full-time academic posts available, creating a surplus of likely jobseekers. That pool becomes adjuncts, who command wages and benefits so low that universities find them irresistible hires. “It’s not uncommon to have a disconnect like this in higher education, in which people are both concerned about the difficult career prospects being faced by recent Ph.D. graduates and concerned there aren’t enough Ph.D. students,” said Michael Teitelbaum, of the Alfred P. Sloan Foundation. The ideas, he said, “often don’t get connected. It’s puzzling.” Adds Jeff Crane, an adjunct who teaches two art courses at SUNY-New Paltz: “There’s this tendency to turn a blind eye to things like that and not make those kinds of equations.” Of course, some adjuncts have other jobs and like working part-time. But many are adjuncts by

necessity. Crane, an artist, says he likes working part-time so he can paint, but thinks he should be paid equitably. He earns about \$5,200 per semester for teaching two courses. The national average for full-time assistant professors is about \$60,000, and \$100,000 once they get tenure. Crane says many of his colleagues work mostly for the health insurance, which, unlike many places, New Paltz offers to adjuncts. Teitelbaum is quick to point out New York may have good reasons to add doctoral students. They will help improve the state’s standing in the research sector, and of course, many may find work in the private sector. But if they come seeking full-time professorial jobs, some will be disappointed. It’s well known that jobs in, say, philosophy, are rare. Even at the very top doctoral programs, only one in 10 who start will end up teaching at an elite research university, according to Brian Leiter, whose blog “Philosophical Gourmet” tracks the field. In fields like history, recent numbers show the market improving, and there will be more jobs as baby boomers retire. But some fields like American and European history still have such a surplus that even community colleges now commonly look only at candidates with a doctoral degree. It’s not just humanities. Groups such as the Business Roundtable have grabbed headlines with urgent warnings about the need to ramp up production of American scientists. In fact, Teitelbaum testified to Congress last year, there is no evidence of a shortage of scientists and engineers, particularly on the Ph.D. track. In the life sciences, the U.S. is awarding twice as many doctorates as two decades ago, but has no more faculty jobs, according to one recent study that prompted the journal Nature to editorialize that “too many graduate schools may be preparing too many students.” A 1998 National Research Council made much the same warning. Nonetheless, universities keep flooding the academic pipeline. The latest federal data show about 45,600 Ph.Ds were awarded in 2005-2006, 5.1 percent higher

than the year before. It was the fourth straight increase and tied for the highest percentage gain since 1971. Faculty like having graduate students around. They’re good intellectual companions, and they bolster a professor’s research efforts. Particularly in the sciences, they also often come with funding from sources such as the National Institutes of Health, which doubled its budget between 1998 and 2003. But funding usually leads to more slots for graduate students, not for professors. That’s why the percentage of science Ph.D.s moving on to “post-docs” (temporary university posts where they do research while continuing to apply for faculty jobs) is surging, from 43 percent to 70 percent in physics, for instance, in just a few years. Of course, universities could cut back on using adjuncts and pony up for better wages and more full-time jobs. Some, like Rutgers in New Jersey, have agreed to add tenure-track positions, and the American Federation of Teachers is pushing for legislation in 11 states to require more teaching come from full-timers. But with universities already under fire for skyrocketing prices, it’s probably unrealistic to expect most will pay more than the going rate for a captive labor pool. Saying “no” to students definitely isn’t easy. If education is good, it seems to follow more is better. And when qualified students come to a university, particularly a public one, it can be hard to justify refusing them the education they say they want. But if public universities (and really that means legislatures and taxpayers) won’t pony up for more full-time faculty, higher education will have to take more responsibility for its role in creating the oversupply problem. “We have flooded the labor market with Ph.Ds who can’t get jobs doing what they’ve been trained to do,” said Cat Warren, a North Carolina State English professor and state American Association of University Professors leader, who recently gave a talk to graduate students at nearby Duke warning them to be realistic. “I think we have to think very hard about that.” Copyright 2008 The Associated Press.

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NREL paving the way for cars of tomorrow

Greg Smith
Staff Writer

With peak oil production quickly approaching and dependence on foreign oil as high as ever, developing alternate means of transportation is becoming a necessity. The National Renewable Energy Laboratory (NREL) is intimately involved with the development of green transportation. NREL's Advanced Vehicles and Fuels Research department is helping to usher the nation into a new era of clean renewable fuels and efficient vehicles.

Millions of heavy vehicles like semi trucks and buses are driven on U.S. roadways each day. These vehicles use a lot of fuel and emit a lot of carbon. Technology for "Heavy Hybrids" is being developed at NREL and could save more than 20 million barrels of oil in 2010, and 250 million barrels in 2020. NREL works closely with the Department of Energy for this and other projects. GM introduced plug-in electric vehicles in the early 1990's, which eventually led to the EV1 in 1996 which the documentary *Who Killed the Electric*

Car is based upon. While many manufacturers in America and abroad offer hybrid vehicles, currently Honda is the only manufacturer to offer "gasoline-free" vehicles for purchase in the U.S.

Recently previewed in movie theaters nationwide is Honda's Hydrogen powered FCX Clarity. The FCX Clarity fuel cell vehicle, powered by hydrogen, is

"Phil," a filler station that connects to your home's natural gas line.

By the time most Mines students have graduated, worked a few years, and are in the market for a new car, many of these gasoline alternatives will be not only available, but realistic and practical as well. Many auto manufacturers already have hybrids for under twenty-five thousand and even

son drives," said Dr. Farrington.

Still, many companies continue developing high-performance hybrids. Innovative vehicles are on the horizon like Cadillac's Provoq FCV and Chevy's Equinox FCV. These new hybrids are SUVs, sports cars, luxury cars, muscle cars, and vans. Companies like VW, GM, Nissan, Ford, Mitsubishi, Toyota, Mazda, Mercedes, Fiat, and more are developing these very advanced vehicles. With the help of researchers at NREL, these technologies will be in

the grasp of consumers soon.

Aptera has a futuristic looking hybrid that boasts 300 miles per gallon. Pre-orders are being accepted now for approximately \$30,000. Tesla Motors has a high-performance Ferrari-esque plug-in pure electric, the Tesla Roadster which will be arriving in 2008 for around \$100,000.

NREL is located in Golden, Colorado and conducts research on Hybrid Electric Vehicles (HEVs), Fuel Cell Vehicles (FCVs), Petroleum Fuels, Heavy Hybrids and more.



Coming soon to a road near you: Daimler AG's "SMART fortwo," a 40-mpg European import coming to the US later this year.

available for purchase in California, the only state to currently have any hydrogen filler stations. An at-home filler station is currently in development. The Honda Civic GX is a natural gas powered vehicle. It comes with

cheaper cars are on the horizon. When it comes to "being green" with transportation, Dr. Rob Farrington of NREL's Advanced Vehicles and Fuels told the Oredigger that it is best to leave the car at home. "Mass transit, ride-sharing, biking, and walking will have a much bigger impact than the type of vehicle a per-

Old-E-days

A look back at a mysterious past

Ricky Walker
Webmaster

Every spring, the Colorado School of Mines holds the annual celebration of E-days, consisting of a seemingly random array of fun events. However, despite the popularity of this yearly event, its history is shrouded in mystery. For example, why does it have such an outlandish name? Why is it only at celebrated at Mines? And why do people decide to sacrifice their sanity for one weekend to participate in apparently random celebration? (Besides the obvious reasons of course.)

These questions are far from easy to answer. In fact, in the book titled *Rocky Mountains to the World: A History of the Colorado School of Mines*, a book solely devoted to CSM history, E-Days earns nothing more than a small tick mark on the timeline of the school. Indeed, it seems the only sources that actually have any information on E-Days are the E-Days booklets, as well as yours truly, the *Oredigger* Newspaper. Despite these shortcomings, it is the duty of a staff writer to search beyond the internet for information and seek out references in the [possibly offensive description of MAC] darkest corridors of the school (in this case, the Mines Activity Council office). This article is the forgotten chapter in School of Mines history: The story of E-Days.

The first Engineering Days celebration was held on January 29, 1927. It was announced in the January 25, 1927, edition of the *Oredigger*, and was originally intended to acquaint students with the many aspects of mineral engineering through exhibits and technical sessions. The E-Days committee was comprised of the entire school, including the school's president at the time, Melvin F. Coolbaugh. Two state senators and seven state representatives attended the event, and were so impressed that they wanted CSM to conduct a similar event for the school legislature as well.

The activities held at the first E-Days celebration were far different from anything seen today. Rather than fireworks and cardboard canoe races, the first E-Days consisted of talks given by council engineers in Guggenheim, campus tours for prospective students, a

basketball game, and a school dance to finish the evening. Despite losing the basketball game, the first Engineering Day was an enormous success for all involved.

Because of the success CSM, decided to attempt another E-Days celebration the following September. However, if history has taught us anything, it is that all good things must come in moderation, and E-Days was no exception. Enthusiasm was low and preparations for the event lagged. In October, the coordinator for the event published an article in the *Oredigger* calling for complete participation from students and staff due to the lack of enthusiasm. The second E-Days was eventually held on a cold and stormy December day, and earned nothing more than a short summary article in the following issue of the *Oredigger*.

Despite the disappointment of the second E-Days, the event lived on to become an annual occasion that has grown with the school. Many notable accomplishments resulted from the event in its early years, including a Geophysics display in 1933 that went on to be displayed at the Chicago World's Fair.

As time progressed, and more majors were added to the school, the concept of E-Days began to transform into a single "weekend to relax." This idea was pushed even further when Career Day became a separate event in the Fall, leaving E-Days as a weekend solely devoted to fun events. The fireworks were added to the celebration in the 1980's and were originally very uncoordinated. Due to safety reasons, the school requested the fireworks be regulated, and after a while they became a regular part of celebration. Finally, over the course of the 90's, the names of each E-Day celebration slowly shifted away from meaningful names and shifted towards more random names incorporating the phrase "E-Days" into the title.

While the activities and events surrounding E-Days have changed, the name has remained the same. Throughout its history, the new activities of each generation have become the strongly-held traditions of the next. While it is impossible to know where E-Days will go from here and what it will become, one thing is for sure—it will always be a shining weekend for all to enjoy.

Friday free pour at Hill Hall

Tim Weilert
Staff Writer

"Friday" and "free" are two words universally loved by college students. It should come as no surprise that the Mines campus finds an alternative to the classic activities when combining the two. Friday Free Pour has become a tradition thanks to the hard work of the Foundry Club.

When asked about the details of the weekly event, Foundry Club member Meghan Ryan said that, "students just have to show up to get involved! It takes place in Hill Hall's High Bay (on the first floor) from 2 pm until 5 pm every Friday. We run two pours, one around 3:15 and another around 4:30. We have a sign up list down in the foundry so people can sign up for one of the pours. This allows us to have two groups of people participate in Friday Free Pour, since space in the foundry is limited to 12 at a time."

Participants mold objects by casting their patterns in a sand-clay mix in a process that is similar to building a sandcastle. The mold is placed in a flask, entrance and exit channels for the molten metal are added, and the mold is ready for pouring.

These events are meant to give students a hands-on learning experience

in metal casting, a skill that can be useful in industry. "What we do is what industry does, ours is just on a lot smaller scale. It's a great way to apply engineering and science into making something artistic. For F.F.P. we use a gas furnace, which is capable of melting aluminum and brasses/bronzes, though we only melt aluminum during Free Pour. The foundry also has

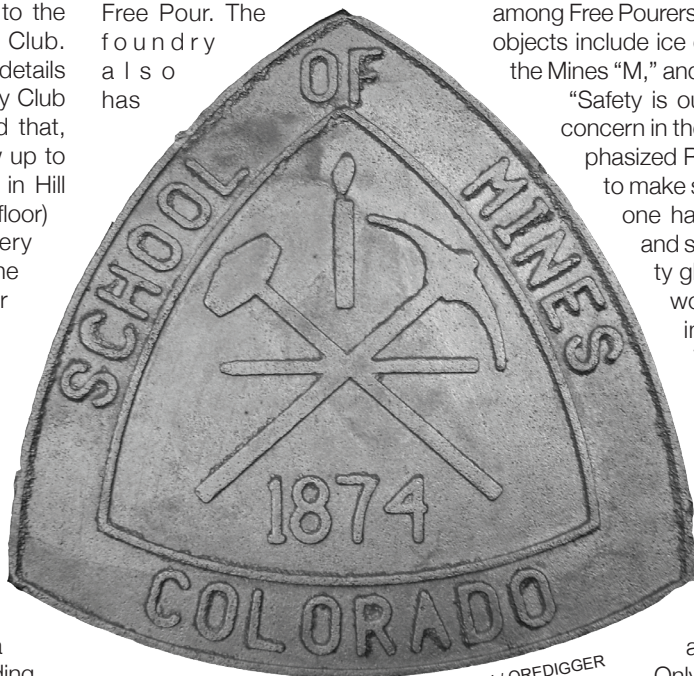
a large role in what is poured. Brent Putman, CSM Freshman and chess enthusiast, experimented with molds in hopes of creating his own chess set. "I've been trying different ways to get the pieces right, but I still need to perfect my process to get all the pieces right," said Putnam.

Putman and several others also cast ping pong paddles, a favorite among Free Pourers. Other popular objects include ice cream scoops, the Mines "M," and the CSM seal.

"Safety is our number one concern in the foundry," emphasized Ryan. "We want to make sure that everyone has a good time and stays safe. Safety glasses must be worn at all times in the foundry.

To enter the foundry you have to have long pants, a shirt with sleeves (no sleeveless or tank tops), and closed toe shoes that are appropriate. Only trained people work near the furnaces and pour (generally T.A.'s or Foundry Club officers), but attendees can learn to pour if they are interested. It requires a little extra work and some training on their part."

three induction furnaces used for the foundry class and research," explained Ryan. Creativity and other hobbies play



ANDY SUDERMAN / OREDIGGER

Spring semester keeps ORC busy

Tim Weilert
Staff Writer

Students feeling the effects of cabin fever have a friend in the Outdoor Recreation Center (ORC). Wintertime is no longer just a time for freezing and studying; a variety of activities are on the schedule for the Spring semester. Several special workshops, classes, presentations, and trips are planned in addition to ORC's continuing rentals and services.

Free ski tuning workshops are planned for January 21 and February 4, both at 7 pm, for anyone interested in learning how to care for their gear and use the ORC workbench. Another option for those who need to get their gear in shape for the slopes is to purchase a tune up and waxing for the special price of \$12 from Jan. 21 until the 25th. The following Saturday, Jan. 26, ORC will team up with the Mines Tele Club to teach and practice Telemark skiing on the slopes of Copper Mountain. A free avalanche awareness class will be offered on Feb. 8, at 6 pm in Student Center Ballroom C, and a \$10 field course will occur the following day.

However, skiing and snowboarding are not the only winter activities. For an intense alpine adventure, join the ORC on their ice climbing trip, taking place Feb. 2. This past weekend, ORC embarked on their snowshoeing trip, and has ample supplies of rental equipment for anyone interested in winter outdoor activities.

ORC director Rob Thompson boasts that "...rentals are in great shape, and we're pretty happy about another semester with everything. We ordered more snow shoes recently so hopefully we can accommodate all of our requests all of the time and never have to deny anybody because we don't have enough gear... that pretty much never happens, but we shouldn't have any problems now that we've got more snow shoes. We've got a ton of winter gear, everything from ice tools to crampons to ice axes, avalanche equipment, snow shoes, and poles." The best deal for renting

any type of gear from ORC is the \$45 Gear Pass. It entitles the pass holder to rent personal gear for up to four days free of charge for the entire semester. Rob Thompson explained that "the pass pays for itself after only a few uses, depending on the equipment rented. For example, a complete kayak setup runs \$40 for a weekend, go more than once and you're covered."

Mines students will have the chance to learn about different outdoor organizations through two presentations during the month of January. Sarah Lancaster of the National Outdoor Leadership School (NOLS) will give a free talk on Jan. 24 at 7 pm in Student Center Ballroom C. Jon Underhill of the non-profit adventure-education organization Outward Bound will present on Jan. 28, in Student Center Ballroom E at 7pm. Both organizations focus on developing personal outdoor skills, learning about responsibility, leadership, and caring for the environment.

Looking ahead to spring, ORC will be involved in activities both on campus and abroad. The indoor climbing wall is gearing up for a busy semester as competitions and climbing classes begin. Belay, movement, and technique classes will occur every week and a \$5 rappelling class will take place on Jan. 27. According to Rob Thompson, "April 12th is our bouldering competition, last semester we had our first competition and we are really excited about this comp." When the snow melts, ORC will host events involving mountain biking, rock climbing, white water rafting, and a variety of other activities.

Finally, ORC's biggest adventure of the semester is their spring break trip to Costa Rica. Mines is partnering with the Costa Rica Rainforest Outward Bound program for a tropical active-vacation. Participants will raft, rappel, surf, snorkel, shop, and sightsee for a week.

All specific information concerning ORC activities is available on-line at http://www.mines.edu/stu_life/recsports/morc/htm and in person at the ORC, located on the west side of the Student Recreation Center.

Geek of the Week

...Tim Jochum, Grad Student: Materials Science

Melinda Bartel
Staff Writer

[Oredigger] Where did you get your Bachelor's?

[Jochum] I graduated from Texas A&M in Chemistry and then I went and worked for DuPont before coming here.

What are you researching while you're here?

I'm currently working for the Colorado Center for Advanced Ceramics (CCAC). I'm working on categorizing the physical properties of beta-eucryptite. When you push on the mineral it causes a phase transformation and it shoots particles out. It looks like dust shooting out of a hole. It's a really interesting phenomenon and we're trying to determine the method.

What's the geekiest thing you've ever done?

I once cheated at a game of scrabble to get the highest score possible.

What are some of your biggest goals?

I want to pay off my student loan debt. And I just want to have Dr. in front of my name.

What do you like to do on your free time?

Usually something that has to do with the computer or my X-box. I don't get outside near as much as I should.

Do you have any geeky quirks?

I collect crystals. Everywhere I go I pick up a rock. They have weird mineral bands through them and they have sentimental value to me.

How did you know you were a geek?

I've always liked science. I had really good science teachers in grade school and high school. My chemistry teacher in high school got me really interested.

Were you ever a part of any clubs or organizations?

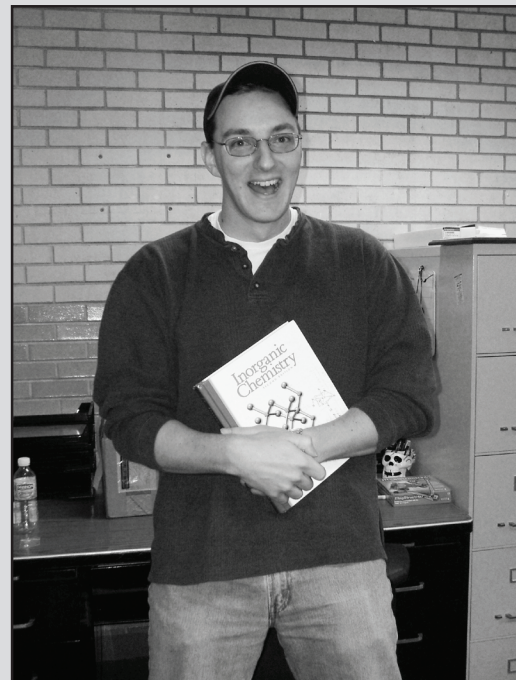
I was the vice president of the Corpus Christi Chemistry Club. C4 for short.

What is the geekiest thing you own?

I have my very own lab coat with the C4 logo on the back, still in my closet.

What are your plans after school?

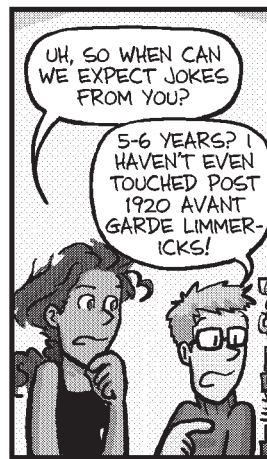
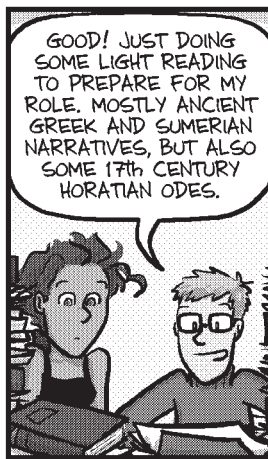
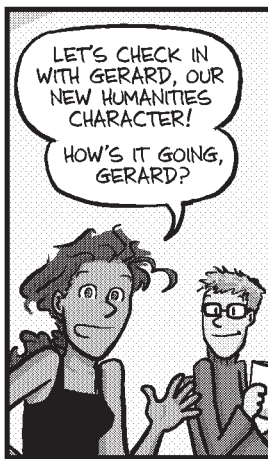
Hopefully I'll get a job where



MEAVE HAMM / OREDIGGER

Do You Feel That Chemistry? Jochum loves Inorganic Chemistry.

I get more application as opposed to theoretical. I get excited about learning about new scientific instruments. I've learned about analytical instruments like a graphite furnace and an atomic absorbance instrument. I'll probably never need to know how to use them, but I just like learning about them.



WWW.PHDCOMICS.COM

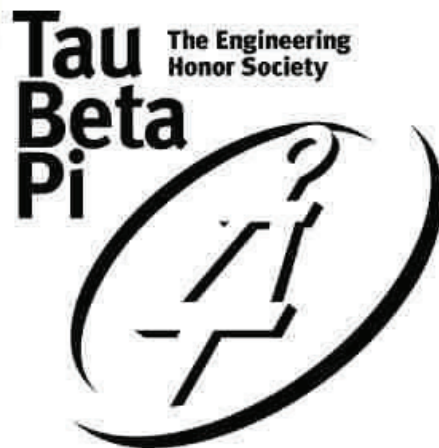
The Tau Beta Pi Award for Excellence in Engineering



Presented to an EPICS II team with an exceptional product and presentation at their final evaluation

Titan

Keano Dashkowitz Scott Ferguson
Joshua Goode Zachary Prophet
Chad Snider



Realistic expectations

Melinda Bartel
Staff Writer

Recycling is a freaking waste. There is no other reason that natural resources exist other than to use them. If the world's resources can support the magnitude of production occurring, then it is logical to take advantage of them.

People want to preserve the earth's beauty and keep the air clean and all sorts of fluffy green utopian bologna. But in reality, who really cares about a tree getting cut down in a Bolivian rain forest or the extra factory that has to be built amidst a hundred others?

There will always be National Parks to preserve "natural beauty" that provide animals with an ideal habitat and give people the chance to enjoy nature.

So, if parts of the world are marked off for those purposes, there should be no guilt in raping and pillaging the rest of the planet. Too much preservation is just a waste.

In cases like ANWR it's ludicrous that people are so nonsensical they think drilling in the designated section is a bad idea. There are 19.5 million acres of land dedicated to ANWR, and the proposed drilling size is a mere 2000 acres.

Who gives a crap about the few species of birds that would lose their homes and the herd of caribou that would be slightly displaced? Even if the oil drilled there didn't make a drastic change in the economy, it's not like it would hurt.

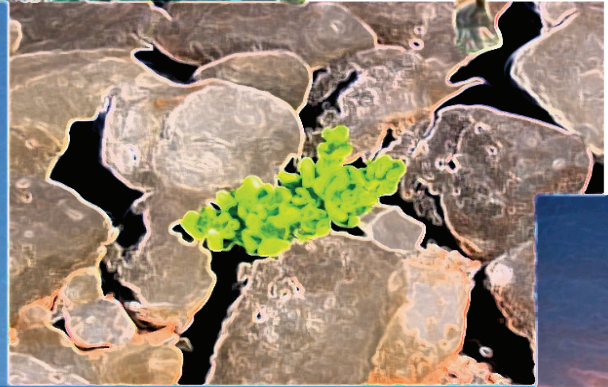
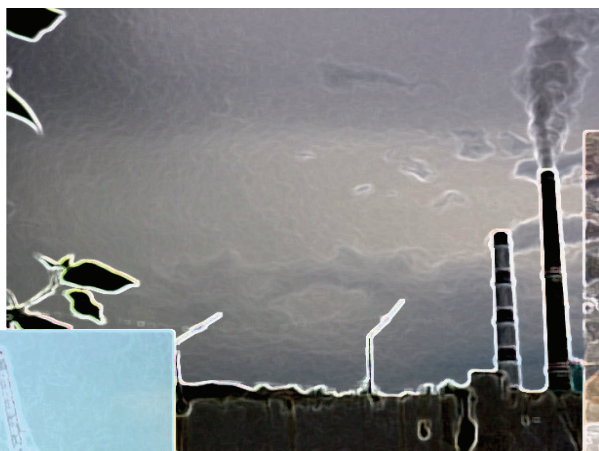
There are so many problems in the world today that a petty thing like pollution should be the least of political worries. Effort would be better spent trying to stop child sex slave trading or corruption in underdeveloped countries. Pollution is not a direct threat and even in a heavily polluted city the quality of life isn't in jeopardy.

In addition, the magnitude of industrialization in polluted cities is so grand that attempts to stop the pollution would probably be more work than it's worth. The amount of energy and resources it takes to recycle adds up and it hardly makes it worth it in the end.

Another futile attempt at stopping pollution is the idea of carbon credits. People are so smug about doing their part for the environment and being "carbon neutral," but what exactly does that mean and how much affect does it actually have?

Environmentalists argue that attempts like recycling and carbon credits prepare for future generations because, even if it doesn't matter in our lifetime, eventually pollution and global warming will catch up with us and become real problems. To that I say humanity will either advance technology in such a way that these problems become moot, or we'll blow ourselves up in a nuclear war or meltdown. Either way, the world we know now will not exist when pollution actually matters.

"There are so many problems in the world today that a petty thing like pollution should be the least of political worries."



Letters to the Editor



Dear Editor,

It is unfortunate that Leslie Godfrey (Letters to the Editors, December 3, 2007) was not around to attend the Oil Shale Symposium, which the Oredigger reported on. The letter might have reflected better the reality of the need, the risks, costs, and benefits of oil shale development. It is certainly true that development of oil shale will result in the generation of substantial quantities of greenhouse gases, as was discussed in a full session in the Symposium. However, the values for the resource (2.5 billion barrels) and the expected impact of that burning that much fuel (266 billion metric tons) are both off by orders of magnitude. One might

ask how one barrel (weighing ~ 150 kg) could release more than 100 metric tons of carbon into the atmosphere.

There is no doubt that we need to act to reduce our impact on the atmosphere, but it is likewise clear that the transition away from hydrocarbon fuels will take an extended period of time. Amory Lovins, an ardent advocate of ending oil use, still projects a 50 year transition, and he is clearly an optimist. This will be a multi-generation effort, and we will need to develop methods to minimize the carbon footprint of even our carbon-based fuels, as they will need to be used. The development of the potential 2-3 trillion barrel global resource of shale oil will certainly have a large

impact on the environment, but it is unlikely to occur in a period of a few decades, as postulated in the calculations. We must develop, simultaneously with the production methods, the means to sequester the CO2 from that production, as well as from the production of other hydrocarbons.

Lesley is also on uncertain ground when she asserts that water use will be huge. In situ methods now being investigated are very much less water intensive than older surface processing methods. Unfortunately, she has relied far too heavily on the documentary "National Sacrifice Zone," and its producer, Joe Brown. The documentary betrays its deep and persistent bias in its title. Had she

attended the Symposium, she would have had a wider, more balanced view of the achievements and significant challenges for the nascent oil shale industry. Two major misconceptions Mr. Brown, whose information appears to be very outdated, seems to have perpetuated:

"new technology in the area requires the "growing" of ice walls underground (one of which had been attempted in Australia but then burst) which takes many years."

Ice walls are being tested to ensure that groundwater is not contaminated, but by Shell in Colorado, not Australia, and the ice wall has not failed.

"the oil from oil shale is very low

grade and would require extensive refining to be useable in vehicles."

The product of in situ processes, as well as that from several new surface processes, is a relatively high quality product that is readily transported, and requires little upgrading.

I wish the Oredigger reporter had been able to attend more of the Symposium, and write more extensively, but I was pleased to have the article printed, and equally pleased to have Lesley Godfrey respond. I hope the Oredigger, and students like Godfrey will attend next year's Symposium as our guests.

Jeremy Boak, Chair
28th Oil Shale Symposium

Editorial Note:
The Oredigger has published public feedback on the oil shale issue. All content is subject to editorial review and approval. The Oredigger does not publish pieces that are defamatory, libelous, or contain hate speech. The Oredigger does not publish pieces that are purely speculative or that contain unsubstantiated claims. The Oredigger does not publish pieces that are purely opinion-based or that contain no factual information. The Oredigger does not publish pieces that are purely entertainment-based or that contain no educational value. The Oredigger does not publish pieces that are purely commercial or that contain no public interest. The Oredigger does not publish pieces that are purely academic or that contain no practical application. The Oredigger does not publish pieces that are purely technical or that contain no general understanding. The Oredigger does not publish pieces that are purely scientific or that contain no common sense. The Oredigger does not publish pieces that are purely historical or that contain no current relevance. The Oredigger does not publish pieces that are purely cultural or that contain no social impact. The Oredigger does not publish pieces that are purely political or that contain no civic duty. The Oredigger does not publish pieces that are purely religious or that contain no spiritual growth. The Oredigger does not publish pieces that are purely philosophical or that contain no moral guidance. The Oredigger does not publish pieces that are purely artistic or that contain no creative expression. The Oredigger does not publish pieces that are purely literary or that contain no intellectual challenge. The Oredigger does not publish pieces that are purely scientific or that contain no factual information. The Oredigger does not publish pieces that are purely technical or that contain no general understanding. The Oredigger does not publish pieces that are purely scientific or that contain no common sense. The Oredigger does not publish pieces that are purely historical or that contain no current relevance. The Oredigger does not publish pieces that are purely cultural or that contain no social impact. The Oredigger does not publish pieces that are purely political or that contain no civic duty. The Oredigger does not publish pieces that are purely religious or that contain no spiritual growth. The Oredigger does not publish pieces that are purely philosophical or that contain no moral guidance. The Oredigger does not publish pieces that are purely artistic or that contain no creative expression. The Oredigger does not publish pieces that are purely literary or that contain no intellectual challenge.

Gravedigger out!

Editorial Policy

Green Tip of the Week

Prevention through purchase

Natalie Wagner
Guest Columnist

This week's theme is Prevention. Here are some ideas to help you consume less.

Note the packaging:

Try to pay attention to the extra plastic wrap layers on that instant noodle soup, or the frozen pizzas. Ideally, you should get local, organic fruits and veggies – nature makes the best, most eco-friendly outer-wrap.

Try Free Trade:

While some may say that this is the best way for Columbian drugs lords to pass unmentionables through the system with little or no intervention from our favorite government, it still supports the local community (<http://www.globalissues.org/TradeRelated/FreeTrade.asp>). You can find Free Trade brands for exotic things like coffee, chocolate, tea, flowers and all sorts of other things at <http://transfairusa.org/>.

Check out the type of Material:

Recycled: There are a lot of products that utilize recycled products, so look around, and test them out.

Recyclable: Pretty much everything that you can get at that local super store has tons of recyclable materials on it. Personally, I try to get everything I can into that single stream pile.

Compostable: These things are essentially plastics that are happy to return to soil in municipal or backyard composting. These are mostly corn starch based, and are up and coming in the economy (<http://www.smithsonian-mag.com/science-nature/plastic.html>).

Renewable: some examples of renewable materials are bamboo (certain types), recycled papers, corn things, some plastics, some other woods, and more (<http://www.sustainableschools.dgs.ca.gov/SustainableSchools/sustainabledesign/materials/rapidlyrenewablematerials.html>).

Stay tuned for more tips next week on how to Reduce and Reuse!

MOVIE REVIEW

Sweeney Todd

Demon barber with disturbing humor

Konrad Klett
Staff Writer

Sweeney Todd is a most excellent example of musicals for those of you who like the genre. For those that do not like musicals, see it anyway as it is quite entertaining.

Based on the Broadway musical, which is in turn based on

serials going as far back as 1847, *Sweeney Todd* is, in my mind, a dark comedy with an easy-to-follow plot (as long as you are paying attention).

The cinematography is classic Tim Burton, bleak and artistic.

The story flows from dialog to song quite smoothly and certainly helps to illustrate that the main characters are all quite mad.

I would warn those who get queasy too easy, however, as this is no *The Nightmare Before Christmas*. It is indeed messed up stuff. For the person with a disturbing sense of humor or a general interest in the tastefully bizarre, this film will not disappoint. As far as musicals go, it is easily the best modern musical since Phantom of the Opera.

I do believe they called quite a few people when they did the casting for this movie; it seems like everyone is in it. Fortunately for all of

us, the actors most of us have seen in numerous other stories are also quite good singers, although they seldom get their opera on in this film.

We have, first and foremost, Johnny Depp who is no surprise in a Tim Burton film. Yet again, he was bloody amazing, sounding ever so slightly like Captain Jack while using an English accent. Depp seems to

"For the person with a disturbing sense of humor or a general interest in the tastefully bizarre, this film will not disappoint."

be one of those people perfectly suited for playing a madman, keeping it convincing while adding a dash of scary yet nonchalant humor. Helena Bonham Carter, (*Fight Club* and *Mary Shelly's Frankenstein*)

seems a bit type cast but fits the role well. She did not shock and amaze but did leave a positive impression as a similarly suitable madwoman. Alan Rickman, Snape from *Harry Potter* and the main antagonist in the first *Die Hard*, was, as usual, an unusual treat. He is once again creepy but dignified, the perfect enemy to hate and admire.

Sasha Baron Cohen, the man behind Borat and Ali G, is over the top and hilarious, perhaps being the least dark character in this pit of blackness.

Even if you do not see it more than once, it would be well worth it for most to at least check it out.

MUSIC REVIEW

Manchester Orchestra

2006's *Virgin* follows one man's life

Tim Weillert
Staff Writer

2007 was a fantastic year for music, but unfortunately the first part of January is not a popular time for musicians to release new material. This week some digging was done to find an album suitable for review and a disc from 2006 made the cut.

Atlanta may be a city known for its hip-hop scene, but amidst the grills and spinners resides a rock band that has been gaining momentum. Manchester Orchestra came from mere obscurity and landed an opening position on a spring tour in 2007 with punk-emo heavyweights Brand New. Since then, Manchester Orchestra has ceaselessly continued touring and promoting their album, *I'm Like A Virgin Losing A Child*.

The album itself has been described, by the band, as the story of one man's life. Old photos grace the cover and liner notes of the disc, following the man until his wedding night (featured on the cover). Though the story is rather vague, reflecting back on relationships and the idea of "home" are hot topics for lyrical content.

Although they are not actually an orchestra, Manchester Orchestra starts the album off with a multi-

layered mix of instruments on "Wolves At Night." The song's high energy continues into "Now That You're Home" until "The Neighborhood Is Bleeding," where the album begins to take on a sort of nostalgic melancholy sound. Lead man Andy Hull grapples with issues of faith, death, and commitment through the middle part of the album. The haunting "Sleeper 1972" maintains a simple style mixed with powerfully emotional lyrics. The protagonist of *Virgin* arrives at the climax with the realization that he can never return to his old lifestyle on "Golden Ticket." The album picks up from there as Hull's lyrics become more thoughtful and less emotional, ending with "Colly Strings," the denouement of the story and a loud instrumental anthem.

Manchester Orchestra may have received a boost in fame from opening for the likes of Brand New, Kings of Leon, and mewithoutYou, but their album is the primary reason they've gained the attention they deserve. Musically it is a treat to hear musicians doing what they enjoy, while lyrically, the words sung are timeless. A person could easily listen to this album 10 or even 20 years from now and still find some sort of meaning.

COOKING CORNER

CHEESY HAMBURGERS

Serves: 4
Time: 20 minutes

1 lb ground beef
Small handful of grated cheddar cheese
Pepper, seasoning salt
Garlic powder to taste

Mix ingredients with hands in a medium sized bowl. Heat a frying pan over medium-high heat. Form 4 patties out of the beef mixture. Cook in pan 5 minutes per side or until cooked through. Serve on buns with any condiments you like.

- SARA POST



HILARY BROWN / OREDIGGER

GARLIC-LEMON GREEN BEANS

Serves: 4
Time: 6 minutes

1 tsp olive oil
1 clove of garlic
2 cans green beans
2 tsp lemon juice
Dash of salt
Dash of pepper

Heat frying pan on medium-low, and place 1 tsp olive oil in the pan. Mince garlic and place in pan. Sauté the garlic until soft, and add drained green beans. Sprinkle lemon juice, salt, and pepper in the pan. The dish is done when the beans are warm. Serve as a side dish to complement any meal.

- HILARY BROWN



HILARY BROWN / OREDIGGER

The future is now for Colorado Avalanche

Glory days may be over as younger players struggle in competitive division

Matthew Pusard
Content Manager

The last remnant of the Colorado Avalanche's glory days may be disappearing fast. Back around the turn of the millennium when the Avalanche brought home 2 Stanley Cups, an NHL record 9 straight division titles, and numerous playoff victories, the team was comprised of soon-to-be Hall-of-Famers, such as Patrick Roy, Peter Forsberg, Ray Bourque, Rob Blake, and Joe Sakic. Now, only the latter remains on the team and his time to retire may be here. Joe Sakic has been a hallmark of class and excellence in the NHL for 19 seasons now. He stayed with one franchise for his entire career and he played hard with skills that never appeared to diminish. Just last season, Sakic notched the 6th 100 point season of his career. He was the second oldest player in NHL history to achieve that mark, just behind the immortal Gordie Howe. But this season has been a little different. He had nearly a point per game pace to start the season, but then Super Joe went out with what the team called a groin in-

jury at the very end of November. Sakic's injury did not respond to rehab so on December 28th, he went under the knife for hernia surgery. He is expected to be out 2 to 3 months. It will cause Sakic to play fewer games in a season than in any of his other 18 seasons of play. The writing may be on the wall for the Burnaby, British Columbia, native's career since age has finally caught up with Joe. To compound the Avalanche's woes, veteran forward Ryan Smyth went down with a broken ankle shortly afterward. He is expected to miss 8 weeks. This leaves the Avalanche in the hands of the youth on the team. Paul Stastny, Wojtek Wolski, and Marek Svatos are all 25 or younger and are 3 of the top 5 scorers left on the squad. Along with Milan Hejduk and Andrew Brunette, these players must try to keep the Colorado Avalanche afloat in an intensely competitive Northwest division. The Avalanche

are currently 4th in the division and yet just 2 points out of first. The strength of the Avalanche is offense. Last season, they ended the season third in the league in scoring and yet they still barely missed the playoffs. The goaltending was horrendous at times last season and the defense was spotty. The Avalanche patched up the defense with free agent Scott Hannan, but they still have the same goalie duo as last season. The offense must keep up the intensity for the Avalanche to have any chance at the playoffs this year. That is where the youth comes in. Fans know exactly what Hejduk and Brunette bring to the table as the pair are exiting their primes, but the young guns just keep getting better and better. Paul Stastny, 22, especially, is the key to the success of the Avs. He is the son of an NHL Hall of Famer, Peter Stastny, who also played with the Avalanche franchise back when they were the Quebec

Nordiques. Paul is looking very much like Peter in his heyday as he is currently the leading scorer on the Avalanche and acting like the lynchpin of the Colorado offense, currently playing center on the team's first line. It looks to be a shoe in that he will become captain of the team once Joe Sakic retires. Paul also has a history of success as he won a NCAA Championship with the University of Denver Pioneers during his freshman season. However, Stastny has caught the injury bug that has plagued the Avs this year, even if his problem is more minor. On Thursday the 17th, he had surgery to remove his appendix and will miss 2 to 3 weeks. Accompanying Stastny on the first line right now is the 21-year-old Wolski, a crafty left wing who has an impressive pedigree. Before coming up to the NHL, he played in the Ontario Hockey League and racked up almost 1.3 points per game there. In his final season before coming up to the NHL, Wolski won the most outstanding player trophy as well as the most sportsmanlike trophy while racking up a dominant 128 points in 58 games. Wolski has progressed slower than Stastny

in the NHL, but at his age, he has more than enough time to catch up. Right behind Stastny and Wolski on the second line is the sharpshooter Svatos, 25. Svatos is the most experienced of the young trio and has recovered from a fractured right shoulder that prematurely ended his rookie season as well as a fairly significant sophomore slump that followed. During his rookie season, Svatos tied an NHL record with 7 game winning goals for a rookie. Svatos has a knack for finishing plays as his goal totals for his young career already dwarf his assists. That has never been more evident than during this season where he currently has racked up 20 goals (5 game winners), but just 2 assists. Svatos is an ideal player to have on the ice during crunch time because he appears to rise to the occasion. But now, he, Stastny, and Wolski do not have the old guard of the Avalanche to protect them. There are rumors that the oft injured Peter Forsberg might make a return to Colorado if he can ever recover from a foot injury, but that seems more and more unlikely by the day. For now, Colorado's youth is entering a trial by fire.

“The Avalanche are currently 4th in the division and yet just 2 points out of first.”

Nuggets' Nene Hilario diagnosed with testicular cancer

Matthew Pusard
Content Manager

Brazilian power forward Nene has had a lot of unfortunate injuries in his career, including a torn ligament in his thumb this season, and his luck continues to be poor. “The Nuggets are currently in 2nd place in their division.” Nene originally took a leave of absence on January 11th for unspecified reasons, but 3 days later, he had surgery to remove a tumor on his right testicle. At this time, there has been no official statement from Nene or his doctors on whether it was malignant or benign, but the Associated Press reports that the biopsy showed that the mass was benign. Nene was fortunate to have his tumor diagnosed when he did. Nene was selected for a random drug test and an abnormality in the test led to the diagnosis of the tumor. It was caught early, according to doctors. Nene is also fortunate to be with an understanding team. Nuggets coach George Karl has been there before too. Karl was diagnosed with prostate cancer back in July of 2005 and also had surgery to remove it. Additionally, Karl's son, Coby, a rookie playing for the Los Angeles Lakers, battled papillary carcinoma. The younger Karl received chemotherapy and surgery for his cancer during his senior year of college.

Nene is currently on an indefinite leave of absence and there is no guarantee that he will return to the team soon even if the tumor is benign as reported. When asked about the possibility of a swift return by Nene, George Karl stated, “I've heard both sides, that he might and he might not. But I don't want to speculate.” The Nuggets have been very inconsistent with the lack of Nene's presence on the court. Since Nene took his leave of absence, the team is 2-2. Their wins were high scoring shootouts with Utah and Orlando, two strong playoff contenders, but the 2 losses were to the Charlotte Bobcats and Atlanta Hawks, both teams with losing records. Kenyon Martin has also missed the past 2 games with a staph infection in his buttocks. Center Marcus Camby has stepped up with Nene and Martin out, posting 2 20+ rebound games in the past 3 games, including a 24 rebound, 11 block performance versus Utah. Linas Kleiza has also made his mark without the 2 big men by scoring a career-high 41 points with 9 rebounds against Utah as well. The Nuggets are currently in 2nd place in their division, behind the Portland Trailblazers. They are .5 games behind the Trailblazers, but hold the 7th best record in the Western Conference.

“Kenyon Martin has also missed the past 2 games with a staph infection in his buttocks.”

Digger Dave's Career Corner

BE READY FOR CAREER DAY – FEBRUARY 12
COMPANY HOSTED & CC WORKSHOPS
(Get final details and sign up on DiggerNet NOW!)

Monday, February 4
OPTIMIZE YOUR RESUME – Hosted by URS/CC 6:00-7:00 PM Food served! Ballroom B

Tuesday, February 5
THE “VAULT” – JOB SEARCH TOOLS – CC Staff 5:00-6:00 PM Ballroom B

Wednesday, February 6
INTERVIEW SKILLS/STRATEGIES –Rob Carlson 12:00-1:00 PM Food served! Ballroom D

NETWORKING YOUR WAY – CC Staff 7:00-8:00 PM Ballroom B

Thursday, February 7
FIRST & LASTING IMPRESSIONS – NW Mutual 12:00-1:00 PM Snacks served! Ballroom B

WORKING INTERNATIONALLY – Gold Fields/CC 5:00-6:00 PM Food served! Ballroom B

EMPLOYER INFO SESSIONS
Wednesday, January 23
NOLTE ASSOCIATES – Information Session 5:00-6:00 PM Brown Building 201A (Civil Engineering, ETM, Engineering Systems)
Thursday, February 7
FAST ENTERPRISES – Information Session 6:00-7:00 PM Hill Hall 202 (Math, Computer Science)

Be sure you know how to use DiggerNet to the max before spending your valuable time and energy other ways to search for full-time jobs or internships.



Work, Interview/Resume Experience Day

Hosted by MEP and Career Center – for ALL Students

An afternoon of professional resume/interview advice from real recruiters! Watch DiggerNet for a list of Employers participating and to reserve your spot. Students are allowed to sign-up for **two** 20-minute sessions. Use this great opportunity to get last-minute feedback on your skills following your attendance at the Career Success Workshops!

WIRED
Monday, February 11 1-5pm
Student Center Ballrooms

Fool's Gold

“Smells like Justice”

Fresh Prince tops TV ratings West Philadelphians rejoice

Tim Weilert
Rotten Duke

The Writers Guild of America strike has kept new material off American television screens for over two months. Unfortunately for fans of prime time shows, such as The Office and Family Guy, no fresh content will be produced as long as the Alliance of Motion Picture and Television Producers fails to meet the WGA's demands.

Networks most affected by the strike are NBC, ABC, FOX, and CBS, each company saw at least a 24.6% drop in viewers. The only network to see a gain in viewing was Nickelodeon, thanks to their “Nick At Night” programming. Re-runs of sitcoms from the 1990's have become increasingly popular as an alternative to watching current shows or reality television.

According to a poll conducted by the Nielsen Media Research firm, old episodes of Will Smith's breakthrough series “The Fresh Prince of Bel Air” have made their way to the top yet again. Fresh Prince saw a peak in viewers during the mid-90's and has once again taken control of the airwaves. Currently, “Fresh Prince” has a



Fresh Prince Ratings- The ratings are good: Carlton dance!

Neilsen rating of 29.7, or 46.2 million viewers, and is shows no sign of coming down any time soon.

The first season, holiday episode, “Deck The Halls,” was a favorite of television watchers, due to a cameo appearance by heavy-weight boxing champion Evander Holyfield. Will also had some crazy antics when it came to the

choice of Christmas decorations.

Due to the recent increase in the popularity of his series, Will Smith has been asked to star in a feature length film based on the “Fresh Prince” series. His agent said Mr. Smith was considering a return to comedy after finishing promoting his current box office hit “I Am Legend.”

Stone Cold Sober

Replace the letters to find a secret message! -Fool's Cryptogram ...Hint: Z=F

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Cameron Frisby
Skiing Mastermind

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Position Two: Snooty Rich Couple. The primary goal of this position is to openly declare your excessive wealth to everyone within a fifty foot radius in an attempt to irritate as many people as possible.

From discussing your favorite brand of caviar to enjoying cold glasses of champagne on the lifts, this job will prevent other skiers from returning.

Position Three: Australian Lift Operator. It is time to unleash your thick, oh so sexy accent on every

female in site. (It is a well known fact that there is nothing more influential than Australian boys on American girls) Release your kryponite-esque power on all wives, groups of college girls, and girlfriends at the resorts.

This simple act will successfully convince their accompanying men to never return for fear of permanently losing their ‘better-halves’.

Position Four: Schizophrenic/Bluetooth headset user. Make all of our patrons feel incredibly awkward as they try to discover if they are being talked to or if you are simply a raving lunatic.

Position Five: Texan. One of the most important positions for ruining somebody's day of skiing, you are charged with driving very poorly down I-70 only to take up four parking spots with your exceptionally large pick up truck.

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If you feel that you fit one of

the job openings (as described above), feel free to contact us at 1-800-LOTS-O-CASH immediately.

That concludes the employment opportunities that are presently available; please call and

submit your resume today! With you and all of your annoying habits in our arsenal, we might emerge from the fight against the dedicated skiers victoriously.



CAMERON FRISBY / OREDIGGER



Bradford lion lynched

“He was just lion there...”

Anonymous
I told you no!

Golden has often been thought to be a hotbed for terrorist activities (just trust me). This became evident on Friday night when a faction of the Irish Republican Army invaded Bradford Hall, taking one hostage. The victim was an endangered lion, John Doe, and was living in squalor and had unsanitary food and water supplies within the complex.

The lion, known for its Marxist rantings, had often been found in a state of delirium chanting, “The proletariat shall rise above the oppression of the bourgeois!!!”

The Bradford regime had used the depressed feline as a mascot. The Environmental Protection Agency and PETA had been called several times regarding the lion’s living conditions, however, no action was ever taken.

Anonymous KGB agents claim that IRA members were targeting PETA, because of their ties to Great Britain and the IRA’s love of exquisite fur coats. The lion, which was easily captured, showed no resistance, and cooperated with his captors.

Onlookers witnessed the graphic hanging of the lion from trees located in the commons area. Hoots and hollers from the terrorists caused little to no disturbance among residents. One anonymous onlooker was heard screaming, “Look- the proletariat is rising!!!” The IRA claims that they will strike again unless the Bradford regime begins producing quality fur products for the Mines campus.



Bradford Lion- Funeral TBA

Wendy’s healthy

The dark side of fast food

Cameron Frisby
Nutritional Expert

Stan Ostrowski has recently filed charges against the popular fast-food chain Wendy’s. His claim shows that their new healthy options lead to the loss of his business, home, and wife.

Stan and his coworkers are all considerably overweight, the group’s favorite hobby is seeing who can fit the most French fries in their mouth, and normal conversation includes making fun of thin people for obviously not enjoying their food enough.

His sad story started one fateful Thursday last April. Stan and his closest colleagues from work stepped into a Denver area Wendy’s franchise for a quick lunch.

After ordering his triple bacon cheeseburger, Stan made the single healthy choice that sealed his downfall. Instead of ordering his usual Jumbo sized fries, he told the cashier that he would like to try the baked potato as a side dish with his meal.

Upon hearing his order, Stan’s coworkers immediately launched into an intensive barrage of poorly thought out insults, such as “Haha, what a loser!” Although these comments are neither funny nor insulting, Stan was mocked ceaselessly for the rest of the meal.

As a result of his choice, Stan went on to lose two hundred pounds over the next two weeks. This drastic weight loss spurred the disintegration of his entire life. Some-

how the baked potato had thrown his metabolism into permanent high gear, consuming his masses of body fat with dangerous speed.

As he slowly moved towards skinny chicken legs, his wife was pushed towards the UPS guy with the tight shorts. After his wife ran away to Mexico with her new lover, Stan’s weight loss continued at such a pace that he lost his share in the contracting company due to his inability to raise his emaciated body out bed. Following the lost of his business, the bank foreclosed on his house, kicking him out onto the street.

All because of one potato, Stan’s life was ruined. Only after long weeks in therapy was he able to muster the will power to take down the company that ruined his life, Wendy’s.

As we anxiously await the verdict of this ground-breaking trial, let everyone remember that the ordering of healthy items can lead to one’s demise...



French Fries- The safe choice of champs.

Peyton Manning’s Super Bowl win rescinded

Choke artist not accepted in Commissioner eyes

Matthew Pusard
Disgruntled Broncos Fan

On the heels of his shocking 28-24 loss to the San Diego Chargers, Peyton Manning’s Super Bowl MVP trophy was taken away by NFL Commissioner Roger Goodell. Goodell explained his unprecedented move by saying, “Peyton Manning seemed to have turned a corner last year, but proved this year that he is the same old choke artist. I would have let it slide if he lost to Phillip Rivers and Ladaian Tomlinson, but he didn’t. He lost to Darren Sproles and Billy F-ing Volek.”

In Manning’s place, Devin Hester has been given the Super Bowl XLI MVP trophy for his game starting kickoff return touchdown. Meanwhile, in a controversial decision, Green Bay QB Brett Favre will be credited with leading the Indianapolis Colts to victory despite not being part of the team.

Monday Night Football pundit Tony Kornheiser defended the decision, stating, “Everybody loves Brett Favre, so it is an easy decision. Favre is a Louisiana gambler, a rugged stud, a kid at heart, a sexy beast, a smooth criminal, a red hot lover, Time’s Person of the Millennium, and the father of my baby.”

Many of Peyton Manning’s other assets were confiscated and redistributed in some sort of weird socialist punishment. Manning’s “laser rocket arm” was removed and given to Washington Redskins QB Todd Collins.

Also, Peyton’s family was taken away from him and given to Broncos QB Jay Cutler. Cutler released a statement that he was disappointed about having Eli Manning as a brother now. “My former brother was a much better quarterback than that putz Eli. He has

better decision making,” Cutler proclaimed. Cutler’s former brother just recently celebrated his 4th birthday.

The only bit of good fortune for Peyton has been the return of his soul from the devil. Since his Super Bowl was invalidated, his contract with Lucifer was null and void. “I already have Eli’s soul anyway for getting him this far in the playoffs,” said Mr. Beelzebub before retreating back to hell to prepare a plan for the next Green Bay game.

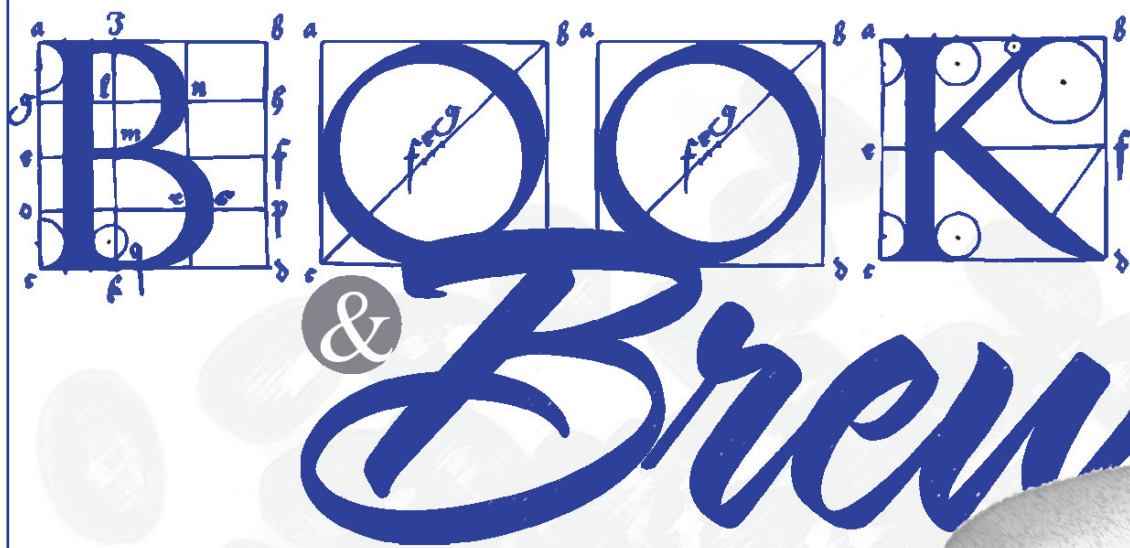
Roger Goodell finished his speech irate because the Colts’ loss meant that there would be no Colts/Patriots rematch in the AFC Championship game. “I had a lot of money riding on that,” cried Goodell. “Now I’m going to be eating ramen and dog food for the next month!”

“... ‘laser rocket arm’ was removed and given to...”



Peyton Manning- Allowing Manning’s Probowl appearance last year was clearly a mistake.





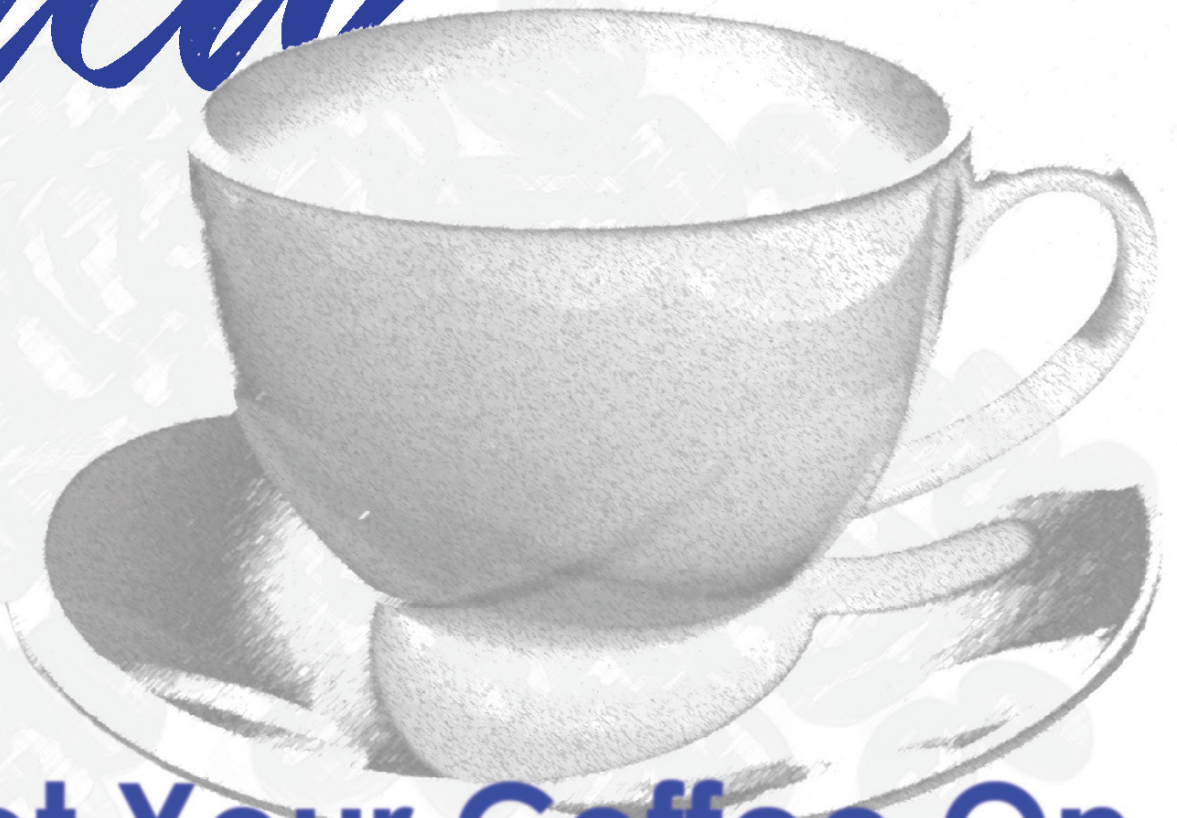
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